

929.d.

$$K = \{(x, y, z) : 1 \leq x^2 + y^2 + z^2 \leq 16, x^2 + y^2 \leq z^2\}$$

$$V = \int\int\int_K dx dy dz$$

$$V = \{\text{pga symmetri}\} = 2 \int\int\int_{K_1} dx dy dz$$

$$K_1 = \{(x, y, z) : 1 \leq x^2 + y^2 + z^2 \leq 16, x^2 + y^2 \leq z^2, z \geq 0\}$$

$$K_{1, r\theta\phi} = \{(r, \theta, \phi) : 1 \leq r \leq 4, 0 \leq \theta \leq \frac{\pi}{4}, 0 \leq \phi < 2\pi\}$$

$$\begin{aligned}x &= r \sin \theta \cos \phi \\y &= r \sin \theta \sin \phi \\z &= r \cos \theta\end{aligned}$$

$$V = 2 \int_{K_1} r^2 \sin \theta \, dr \, d\theta \, d\phi$$

$$V = 2 \cdot 2 \int_0^{\frac{\pi}{4}} \int_0^{\frac{\pi}{4}} \int_1^3 r^3 \cos \theta \, dr \, d\theta \, d\phi = 42 \pi (2 - \sqrt{2})$$